AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for producing a metallic colloid comprising particles comprising a metal and an organic molecule, the method comprising:

preparing a solution comprising cations of the metal and a reducing agent by dissolving the cations and the reducing agent in the solution, subsequently heating the solution to produce the metallic colloid, and attaching the organic molecule to the metallic colloid, wherein the organic molecule comprises a moiety that has an affinity for the metallic colloid and another moiety that has an affinity for a biomolecule,

wherein the metallic colloid has a Raman signal that is greater than that of a silver colloid prepared by a titration method wherein a boiling silver nitrate solution is titrated with a sodium citrate solution to produce the silver colloid.

2. (Original) The method of claim 1, wherein the reducing agent is citrate or borohydride.

3. (Original) The method of claim 1, wherein said heating is performed for at least about 30 minutes.

4. (Original) The method of claim 1, wherein said heating is performed for at least about 60 minutes.

5. (Original) The method of claim 1, wherein said heating is performed using microwaves.

6. (Original) The method of claim 1, wherein said heating is performed using a convection oven.

7. (Canceled)

8. (Original) The method of claim 1, wherein the metal is silver, gold, platinum, or aluminum.

9. (Previously Presented) The method of claim 1, wherein the organic molecule is a bifunctional organic molecule.

10. (Previously Presented) The method of claim 1, wherein the organic molecule contains sulfur.

11. (Previously Presented) The method of claim 1, wherein the organic molecule has a molecular weight less than about 500 Daltons.

12. (Previously Presented) The method of claim 1, wherein the organic molecule contains a thiol moiety or a disulfide moiety.

13. (Previously Presented) The method of claim 1, wherein the organic molecule is thiomalic acid, L-cysteine diethyl ester, S-carboxymethyl-L-cysteine, cystamine, or meso-2,3-dimercaptosuccinic acid.

14. (Withdrawn) A method for detecting a biomolecule in a sample, comprising

a) modifying a metallic surface with an organic molecule having affinities for the metallic surface and for the biomolecule,

b) contacting the modified metallic surface with the biomolecule, and

c) detecting SERS signals emitted by the biomolecule, wherein the signals are indicative of the presence of the biomolecule.

15. (Withdrawn) The method of claim 14, wherein the biomolecule is a peptide, polypeptide, antibody, protein, polynucleotide, carbohydrate, or lipid.

16. (Withdrawn) The method of claim 14, wherein the organic molecule contains sulfur.

17. (Withdrawn) The method of claim 14, wherein the organic molecule has a molecular weight less than about 500 Daltons.

18. (Withdrawn) The method of claim 14, wherein the metallic surface is a silver surface, a gold surface, a platinum surface, or an aluminum surface.

19. (Withdrawn) The method of claim 14, wherein the organic molecule contains a thiol moiety or a disulfide moiety.

20. (Withdrawn) The method of claim 14, wherein the organic molecule is thiomalic acid, L-cysteine diethyl ester, S-carboxymethyl-L-cysteine, cystamine, or meso-2,3-dimercaptosuccinic acid.

21. (Withdrawn) The method of claim 14, wherein the metallic surface is formed by aggregating a plurality of metallic particles to form clusters ranging from about 50 nm to 200 nm.

22. (Withdrawn) A method for detecting an analyte in a sample comprising:

contacting a sample containing an analyte with a plurality of surface modified metallic colloids, wherein the analyte binds to the modified metallic surface, and

detecting SERS signals emitted by the analyte, wherein the signals are indicative of the presence of the analyte.

23. (Withdrawn) The method of claim 22, wherein the analyte is a biological agent.

24. (Withdrawn) The method of claim 22, wherein the analyte is a microorganism.

25. (Withdrawn) The method of claim 24, wherein the microorganism is a virus or a bacterium.

26. (Withdrawn) The method of claim 23, wherein the biological agent is a peptide, polypeptide, antibody, protein, or a polynucleotide.

27. (Withdrawn) The method of claim 23, wherein the biological agent is a polynucleotide.

28. (Withdrawn) The method of claim 23, wherein the biological agent is DNA, RNA, or peptide nucleic acid (PNA).

29. (Withdrawn) The method of claim 22, wherein the sample is an air sample.

30. (Withdrawn) The method of claim 22, wherein the sample is a liquid sample.

31. (Withdrawn) The method of claim 22, wherein the sample is a biological sample.

32. (Withdrawn) The method of claim 22, wherein the analyte is detected in an application which is a member selected from the group consisting of environmental toxicology, remediation, biomedicine, material quality control, food monitoring, agricultural monitoring, heavy industrial manufacturing, ambient air monitoring, worker protection, emissions control, product quality testing, oil/gas petrochemical applications, combustible gas detection, H_2S monitoring, hazardous leak detection, emergency response and law enforcement applications, explosives detection, utility and power applications, food/beverage/agriculture applications, freshness detection, fruit ripening control, fermentation process monitoring and control, flavor composition and identification, product quality and identification, refrigerant and fumigant detection, cosmetic/perfume applications, fragrance formulation, chemical/plastics/pharmaceuticals applications, fugitive emission identification, solvent recovery effectiveness, hospital/medical applications, anesthesia and sterilization gas detection, infectious disease detection, breath analysis and body fluids analysis.

33. (Withdrawn) The method of claim 22, wherein the metallic colloids are silver colloids, gold colloids, platinum colloids, or aluminum colloids.

34. (Withdrawn) The method of claim 22, wherein the metallic colloid surface is modified by attachment of a sulfur-containing organic molecule.

35. (Withdrawn) The method of claim 34, wherein the organic molecule has a molecular weight less than about 500 Daltons.

36. (Withdrawn) The method of claim 34, wherein the organic molecule contains a thiol moiety or a disulfide moiety.

37. (Withdrawn) The method of claim 34, wherein the organic molecule is thiomalic acid, L-cysteine diethyl ester, S-carboxymethyl-L-cysteine, cystamine, or meso-2,3-dimercaptosuccinic acid.

38. (Withdrawn) A system for detecting an analyte in a sample comprising:

an array comprising more than one surface modified metallic colloids;

a sample containing at least one analyte;

a Raman spectrometer; and

a computer comprising an algorithm for analysis of the sample.

39. (Withdrawn) A kit for labeling surface modified metallic colloids comprising

a plurality of metallic colloids surface modified according to the method of claim 9 and

a biological agent.

40. (Withdrawn) The kit of claim 39, wherein the biological agent is a peptide, polypeptide, protein, antibody, or a polynucleotide.

41. (Withdrawn) The kit of claim 39, wherein the biological agent is a polynucleotide.

42. (Withdrawn) The kit of claim 39, wherein the biological agent is DNA, RNA or peptide nucleic acid (PNA).

43. (Withdrawn) A method of identifying a microorganism comprising:

contacting a sample suspected of containing the microorganism with an array of metallic colloids surface modified by the method of claim 9;

detecting SERS signals upon contacting the sample with the modified metallic colloids and

associating the SERS signals from the modified metallic colloids with the identity of the microorganism.

44. (Withdrawn) A method of identifying an analyte comprising:

contacting a sample suspected of containing the analyte with an array of metallic colloids surface modified by the method of claim 9;

detecting SERS signals upon contacting the sample with the modified metallic colloids; and

associating the SERS signals from the modified metallic colloids with the identity of the analyte.

detecting SERS signals upon contacting the sample with the modified metallic colloids; and

associating the SERS signals from the modified metallic colloids with the identity of the microorganism.

45. (Withdrawn) A metallic colloid produced by the method of claim 1.

46. (Withdrawn) A metallic colloid produced by the method of claim 9.

47. (Previously Presented) The method of claim 1, wherein the solution is an aqueous solution.

48. (Previously Presented) The method of claim 1, wherein said subsequent heating the solution is performed at a temperature of about 95°C.

49. (Previously Presented) The method of claim 1, wherein the metallic colloid produces a higher SERS signal than that produced by another metallic colloid comprising the same metal except that the another metallic colloid is produced by titrating the cations and the reducing agent in the solution at a near boiling point temperature.

50. (Previously Presented) The method of claim 49, wherein the metallic colloid produces at least about 50% higher SERS signal than that produced by the another metallic colloid.

51. (Previously Presented) The method of claim 1, wherein the cations and reducing agent are each present in the aqueous solution at a concentration of about 0.5 M or higher than 0.5 M.

52. (Previously Presented) The method of claim 1, wherein the metallic colloid has a Raman signal that is 50% or more than that of a silver colloid prepared by a titration method wherein a boiling silver nitrate solution is titrated with a sodium citrate solution to produce the silver colloid.

53. (Previously Presented) The method of claim 1, wherein the metallic colloid is formed by aggregating a plurality of the metallic particles to form clusters ranging from about 50 nm to 200 nm.

54. (Previously Presented) A method for producing a metallic colloid comprising metallic particles comprising a metal and an organic molecule, the method comprising:

preparing a solution comprising cations of the metal and a reducing agent by dissolving the cations and the reducing agent in the solution, subsequently heating the solution to

produce the metallic colloid, and attaching the organic molecule to the metallic colloid, wherein the organic molecule comprises a moiety that has an affinity for the metallic colloid and another moiety that has an affinity for a biomolecule,

wherein the metallic colloid is formed by aggregating a plurality of the metallic particles to form clusters ranging from about 50 nm to 200 nm.

55. (New) The method of claim 1, wherein the metallic colloid has a Raman signal that is about 140% to 180% more than that of a silver colloid prepared by a titration method wherein a boiling silver nitrate solution is titrated with a sodium citrate solution to produce the silver colloid.